SEQUENCE LISTING

<110> Aguinaldo, Anna Marie
Beyna, Amelia Joy
Cho, Ho Sung
Desjarlais, John Rudolph
Marshall, Shannon Alicia
Muchhal, Umesh
Villegas, Michael Francis Aquino
Zhukovsky, Eugene

<120> INTERFERON VARIANTS WITH IMPROVED PROPERTIES

<130> A-71431-3

<140> US 10/676,705
<141> 2003-09-30

<150> US 60/489,725
<151> 2003-07-24

<150> US 60/477,246
<151> 2003-06-10

<150> US 60/415,541
<151> 2002-10-01

<160> 90

<170> PatentIn version 3.2

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Met Ala Ser Pro Phe Ala Leu Leu Met Val Leu Val Val Leu Ser Cys
1               5                  10                  15

Lys Ser Ser Cys Ser Leu Gly Cys Asp Leu Pro Glu Thr His Ser Leu
            20                  25                  30

Asp Asn Arg Arg Thr Leu Met Leu Leu Ala Gln Met Ser Arg Ile Ser
        35                  40                  45

Pro Ser Ser Cys Leu Met Asp Arg His Asp Phe Gly Phe Pro Gln Glu
    50                  55                  60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Pro Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Leu Ile Gln Gln Ile Phe Asn Leu Phe Thr Thr Lys Asp Ser
                85                  90                  95
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Ser Ala Ala Trp Asp Glu Asp Leu Leu Asp Lys Phe Cys Thr Glu Leu
100 105 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Met Gln Glu Glu Arg
115 120 125

Val Gly Glu Thr Pro Leu Met Asn Ala Asp Ser Ile Leu Ala Val Lys
130 135 140

Lys Tyr Phe Arg Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145 150 155 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser
165 170 175

Leu Ser Thr Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu
180 185

<210> 2
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Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
1 5 10 15

Leu Leu Ala Gln Met Arg Lys Ile Ser Leu Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
35 40 45

Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
50 55 60

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
65 70 75 80

Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
85 90 95

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
100 105 110

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu

115 120 125

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
130 135 140

Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 150 155 160

Leu Arg Ser Lys Glu
165

<210> 3
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<213> Homo sapiens

<400> 3

Met Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu
1 5 10 15

Met Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys
20 25 30

Asp Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe
35 40 45

Gln Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile
50 55 60

Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr
65 70 75 80

Leu Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met
100 105 110

Lys Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu
145 150 155 160

Ser Leu Arg Ser Lys Glu
165

<210> 4
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<213> Homo sapiens

<400> 4

Met Ala Leu Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1 5 10 15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
20 25 30

Gly Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Gly Arg Ile Ser
35 40 45

His Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Glu Glu
50 55 60

Glu Phe Asp Gly His Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65 70 75 80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Glu Asp Ser
85 90 95

Ser Ala Ala Trp Glu Gln Ser Leu Leu Glu Lys Phe Ser Thr Glu Leu
100 105 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Ile Gln Glu Val Gly
115 120 125

Val Glu Glu Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Arg
130 135 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145 150 155 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser
165 170 175

Phe Ser Thr Asn Leu Gln Lys Arg Leu Arg Arg Lys Asp
180 185

<210> 5

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<213> Homo sapiens

<400> 5

Met Ala Leu Pro Phe Val Leu Leu Met Ala Leu Val Val Leu Asn Cys
1 5 10 15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
20 25 30

Ser Asn Arg Arg Thr Leu Met Ile Met Ala Gln Met Gly Arg Ile Ser
35 40 45

Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu
50 55 60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65 70 75 80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser
85 90 95

Ser Ala Thr Trp Asp Glu Thr Leu Leu Asp Lys Phe Tyr Thr Glu Leu
100 105 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Met Met Gln Glu Val Gly
115 120 125

Val Glu Asp Thr Pro Leu Met Asn Val Asp Ser Ile Leu Thr Val Arg
130 135 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145 150 155 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
165 170 175

Leu Ser Ala Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu
180 185

<210> 6
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<212> PRT
<213> Homo sapiens

<400> 6

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Met Ala Leu Pro Phe Ala Leu Leu Met Ala Leu Val Val Leu Ser Cys
1               5                   10                  15

Lys Ser Ser Cys Ser Leu Asp Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30

Gly His Arg Arg Thr Met Met Leu Leu Ala Gln Met Arg Arg Ile Ser
        35                  40                  45

Leu Phe Ser Cys Leu Lys Asp Arg His Asp Phe Arg Phe Pro Gln Glu
    50                  55                  60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Glu Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Val Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser
                85                  90                  95

Ser Val Ala Trp Asp Glu Arg Leu Leu Asp Lys Leu Tyr Thr Glu Leu
            100                 105                 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Met Gln Glu Val Trp
        115                 120                 125

Val Gly Gly Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Arg
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175

Ser Ser Arg Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu
            180                 185
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<210> 7
<211> 189
<212> PRT
<213> Homo sapiens

<400> 7

```
Met Ala Arg Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1               5                   10                  15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30
```

```
Arg Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Gly Arg Ile Ser
        35                  40                  45

Pro Phe Ser Cys Leu Lys Asp Arg His Glu Phe Arg Phe Pro Glu Glu
    50                  55                  60

Glu Phe Asp Gly His Gln Phe Gln Lys Thr Gln Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Glu Asp Ser
                85                  90                  95

Ser Ala Ala Trp Glu Gln Ser Leu Leu Glu Lys Phe Ser Thr Glu Leu
            100                 105                 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Ile Gln Glu Val Gly
        115                 120                 125

Val Glu Glu Thr Pro Leu Met Asn Glu Asp Phe Ile Leu Ala Val Arg
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175

Phe Ser Thr Asn Leu Lys Lys Gly Leu Arg Arg Lys Asp
            180                 185
```

<210> 8
<211> 189
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Ala Leu Thr Phe Tyr Leu Met Val Ala Leu Val Val Leu Ser Tyr
1               5                   10                  15

Lys Ser Phe Ser Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30

Gly Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Arg Arg Ile Ser
        35                  40                  45
```

```
Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Glu Phe Pro Gln Glu
    50                  55                  60

Glu Phe Asp Asp Lys Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser
                85                  90                  95

Ser Ala Ala Leu Asp Glu Thr Leu Leu Asp Glu Phe Tyr Ile Glu Leu
            100                 105                 110

Asp Gln Gln Leu Asn Asp Leu Glu Val Leu Cys Asp Gln Glu Val Gly
        115                 120                 125

Val Ile Glu Ser Pro Leu Met Tyr Glu Asp Ser Ile Leu Ala Val Arg
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145                 150                 155                 160

Ser Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175

Leu Ser Ile Asn Leu Gln Lys Arg Leu Lys Ser Lys Glu
            180                 185
```

<210> 9
<211> 189
<212> PRT
<213> Homo sapiens

<400> 9

```
Met Ala Leu Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1               5                   10                  15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30

Gly Asn Arg Arg Ala Leu Ile Leu Leu Gly Gln Met Gly Arg Ile Ser
        35                  40                  45

Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Arg Ile Pro Gln Glu
    50                  55                  60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65                  70                  75                  80
```

```
His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Glu Asp Ser
                85                  90                  95

Ser Ala Ala Trp Glu Gln Ser Leu Leu Glu Lys Phe Ser Thr Glu Leu
            100                 105                 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Ile Gln Glu Val Gly
        115                 120                 125

Val Glu Glu Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Arg
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Ile Glu Arg Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser
                165                 170                 175

Phe Ser Thr Asn Leu Gln Lys Arg Leu Arg Arg Lys Asp
            180                 185
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<210> 10
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<212> PRT
<213> Homo sapiens

<400> 10

```
Met Ala Ser Pro Phe Ala Leu Leu Met Ala Leu Val Val Leu Ser Cys
1               5                   10                  15

Lys Ser Ser Cys Ser Leu Gly Cys Asp Leu Pro Glu Thr His Ser Leu
            20                  25                  30

Asp Asn Arg Arg Thr Leu Met Leu Leu Ala Gln Met Ser Arg Ile Ser
        35                  40                  45

Pro Ser Ser Cys Leu Met Asp Arg His Asp Phe Gly Phe Pro Gln Glu
    50                  55                  60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Pro Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Leu Ile Gln Gln Ile Phe Asn Leu Phe Thr Thr Lys Asp Ser
                85                  90                  95
```

Ser Ala Ala Trp Asp Glu Asp Leu Leu Asp Lys Phe Cys Thr Glu Leu
100 105 110

Tyr Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Met Gln Glu Glu Arg
115 120 125

Val Gly Glu Thr Pro Leu Met Asn Ala Asp Ser Ile Leu Ala Val Lys
130 135 140

Lys Tyr Phe Arg Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145 150 155 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser
165 170 175

Leu Ser Thr Asn Leu Gln Glu Arg Leu Arg Arg Lys Glu
180 185

<210> 11
<211> 189
<212> PRT
<213> Homo sapiens

<400> 11

Met Ala Leu Pro Phe Ala Leu Met Met Ala Leu Val Val Leu Ser Cys
1 5 10 15

Lys Ser Ser Cys Ser Leu Gly Cys Asn Leu Ser Gln Thr His Ser Leu
20 25 30

Asn Asn Arg Arg Thr Leu Met Leu Met Ala Gln Met Arg Arg Ile Ser
35 40 45

Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Glu Phe Pro Gln Glu
50 55 60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65 70 75 80

His Glu Met Met Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asn Ser
85 90 95

Ser Ala Ala Trp Asp Glu Thr Leu Leu Glu Lys Phe Tyr Ile Glu Leu
100 105 110

Phe Gln Gln Met Asn Asp Leu Glu Ala Cys Val Ile Gln Glu Val Gly
115 120 125

```
Val Glu Glu Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Lys
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Met Glu Lys Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175

Phe Ser Thr Asn Leu Gln Lys Arg Leu Arg Arg Lys Asp
            180                 185
```

<210> 12
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<212> PRT
<213> Homo sapiens

<400> 12

```
Met Ala Leu Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1               5                   10                  15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30

Gly Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Gly Arg Ile Ser
        35                  40                  45

His Phe Ser Cys Leu Lys Asp Arg Tyr Asp Phe Gly Phe Pro Gln Glu
    50                  55                  60

Val Phe Asp Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Ala Phe
65                  70                  75                  80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser
                85                  90                  95

Ser Ala Ala Trp Asp Glu Thr Leu Leu Asp Lys Phe Tyr Ile Glu Leu
            100                 105                 110

Phe Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Thr Gln Glu Val Gly
        115                 120                 125

Val Glu Glu Ile Ala Leu Met Asn Glu Asp Ser Ile Leu Ala Val Arg
    130                 135                 140
```

```
Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Met Gly Lys Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175

Phe Ser Thr Asn Leu Gln Lys Gly Leu Arg Arg Lys Asp
            180                 185
```

<210> 13
<211> 189
<212> PRT
<213> Homo sapiens

<400> 13

```
Met Ala Leu Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1               5                   10                  15

Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30

Gly Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Gly Arg Ile Ser
        35                  40                  45

Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Leu Pro Gln Glu
    50                  55                  60

Glu Phe Asp Gly Asn Gln Phe Gln Lys Thr Gln Ala Ile Ser Val Leu
65                  70                  75                  80

His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Glu Asp Ser
                85                  90                  95

Ser Ala Ala Trp Glu Gln Ser Leu Leu Glu Lys Phe Ser Thr Glu Leu
            100                 105                 110

Tyr Gln Gln Leu Asn Asn Leu Glu Ala Cys Val Ile Gln Glu Val Gly
        115                 120                 125

Met Glu Glu Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Arg
    130                 135                 140

Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145                 150                 155                 160

Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Leu Ser
                165                 170                 175
```

```
Phe Ser Thr Asn Leu Gln Lys Ile Leu Arg Arg Lys Asp
            180                 185


<210>  14
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<212>  PRT
<213>  Homo sapiens

<400>  14

Met Ala Leu Ser Phe Ser Leu Leu Met Ala Val Leu Val Leu Ser Tyr
1               5                  10                  15


Lys Ser Ile Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20                  25                  30


Gly Asn Arg Arg Ala Leu Ile Leu Leu Ala Gln Met Gly Arg Ile Ser
        35                  40                  45


Pro Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu
    50                  55                  60


Glu Phe Asp Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu
65                  70                  75                  80


His Glu Met Ile Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser
                85                  90                  95


Ser Ala Thr Trp Glu Gln Ser Leu Leu Glu Lys Phe Ser Thr Glu Leu
            100                 105                 110


Asn Gln Gln Leu Asn Asp Met Glu Ala Cys Val Ile Gln Glu Val Gly
        115                 120                 125


Val Glu Glu Thr Pro Leu Met Asn Val Asp Ser Ile Leu Ala Val Lys
    130                 135                 140


Lys Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser
145                 150                 155                 160


Pro Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser
                165                 170                 175


Leu Ser Lys Ile Phe Gln Glu Arg Leu Arg Arg Lys Glu
            180                 185
```

<210> 15
<211> 166
<212> PRT
<213> Homo sapiens

<400> 15

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 16
<211> 207
<212> PRT
<213> Homo sapiens

<400> 16

Met Ser Thr Lys Pro Asp Met Ile Gln Lys Cys Leu Trp Leu Glu Ile
1 5 10 15

```
Leu Met Gly Ile Phe Ile Ala Gly Thr Leu Ser Leu Asp Cys Asn Leu
            20                  25                  30

Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn Leu Arg His Leu
        35                  40                  45

Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu Arg Glu Asn Ile
    50                  55                  60

Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys
65                  70                  75                  80

Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn
                85                  90                  95

Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg His Leu Lys
            100                 105                 110

Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys
        115                 120                 125

Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu Met Lys Glu
    130                 135                 140

Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu Ser Ser Leu
145                 150                 155                 160

Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu Lys Glu Lys
                165                 170                 175

Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu Ile Arg Arg
            180                 185                 190

Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe Arg Arg Lys
        195                 200                 205
```

<210> 17
<211> 208
<212> PRT
<213> Homo sapiens

<400> 17

```
Met Ile Ile Lys His Phe Phe Gly Thr Val Leu Val Leu Leu Ala Ser
1               5                   10                  15

Thr Thr Ile Phe Ser Leu Asp Leu Lys Leu Ile Ile Phe Gln Gln Arg
```

```
            20                  25                  30

Gln Val Asn Gln Glu Ser Leu Lys Leu Leu Asn Lys Leu Gln Thr Leu
        35                  40                  45

Ser Ile Gln Gln Cys Leu Pro His Arg Lys Asn Phe Leu Leu Pro Gln
    50                  55                  60

Lys Ser Leu Ser Pro Gln Gln Tyr Gln Lys Gly His Thr Leu Ala Ile
65                  70                  75                  80

Leu His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe Arg Ala Asn Ile
                85                  90                  95

Ser Leu Asp Gly Trp Glu Glu Asn His Thr Glu Lys Phe Leu Ile Gln
            100                 105                 110

Leu His Gln Gln Leu Glu Tyr Leu Glu Ala Leu Met Gly Leu Glu Ala
        115                 120                 125

Glu Lys Leu Ser Gly Thr Leu Gly Ser Asp Asn Leu Arg Leu Gln Val
    130                 135                 140

Lys Met Tyr Phe Arg Arg Ile His Asp Tyr Leu Glu Asn Gln Asp Tyr
145                 150                 155                 160

Ser Thr Cys Ala Trp Ala Ile Val Gln Val Glu Ile Ser Arg Cys Leu
                165                 170                 175

Phe Phe Val Phe Ser Leu Thr Glu Lys Leu Ser Lys Gln Gly Arg Pro
            180                 185                 190

Leu Asn Asp Met Lys Gln Glu Leu Thr Thr Glu Phe Arg Ser Pro Arg
        195                 200                 205
```

<210> 18
<211> 195
<212> PRT
<213> Homo sapiens

<400> 18

```
Met Ala Leu Leu Phe Pro Leu Leu Ala Ala Leu Val Met Thr Ser Tyr
1               5                   10                  15

Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu
            20                  25                  30
```

Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser
35 40 45

Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu
50 55 60

Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu
65 70 75 80

His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser
85 90 95

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu
100 105 110

His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly
115 120 125

Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg
130 135 140

Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser
145 150 155 160

Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe
165 170 175

Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu
180 185 190

Gly Ser Ser
195

<210> 19
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 19

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 20
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 20

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln

50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 21
<211> 166
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<220>
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<400> 21

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

```
Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 22
<211> 166
<212> PRT
<213> Artificial

<220>
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<400> 22

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110
```

```
Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 23
<211> 166
<212> PRT
<213> Artificial .

<220>
<223> synthetic

<400> 23

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Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140
```

```
Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 24
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 24

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
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165

<210> 25
<211> 166
<212> PRT
<213> Artificial

<220>
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<400> 25

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 26
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 26

Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Arg Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 27
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 27

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Ala Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 28
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 28

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                  10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 29
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 29

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Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                  10                  15
```

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 30
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 30

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
35 40 45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
85 90 95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 31
<211> 757
<212> DNA
<213> Homo sapiens

<400> 31
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ctcctgtggc aattgaatgg gaggcttgaa tattgcctca aggacaggat gaactttgac 180

atccctgagg agattaagca gctgcagcag ttccagaagg aggacgccgc attgaccatc 240

tatgagatgc tccagaacat ctttgctatt ttcagacaag attcatctag cactggctgg 300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag 360

acagtcctgg aagaaaaact ggagaaagaa gattttacca ggggaaaact catgagcagt 420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt 480

cactgtgcct ggaccatagt cagagtggaa atcctaagga acttttactt cattaacaga 540

cttacaggtt acctccgaaa ctgaagatct cctagcctgt ccctctggga ctggacaatt 600

gcttcaagca ttcttcaacc agcagatgct gtttaagtga ctgatggcta atgtactgca 660

aatgaaagga cactagaaga ttttgaaatt tttattaaat tatgagttat ttttatttat 720

ttaaatttta ttttggaaaa taaattattt ttggtgc 757

<210> 32
<211> 187
<212> PRT
<213> Homo sapiens

<400> 32

Met Thr Asn Lys Cys Leu Leu Gln Ile Ala Leu Leu Leu Cys Phe Ser
1 5 10 15

Thr Thr Ala Leu Ser Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg
20 25 30

Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg
35 40 45

Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu
50 55 60

Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile
65 70 75 80

Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser
85 90 95

Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val
100 105 110

Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu
115 120 125

Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys
130 135 140

Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser
145 150 155 160

```
His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr
                165                 170                 175

Phe Ile Asn Arg Leu Thr Gly Tyr Leu Arg Asn
            180                 185
```

<210> 33
<211> 166
<212> PRT
<213> Homo sapiens

<400> 33

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Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 34
<211> 186

<212> PRT
<213> Homo sapiens

<400> 34

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Ser Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn Met Gly Ser Ser His His His His His His
165 170 175

Ser Ser Gly Leu Val Pro Arg Gly Ser His
180 185

<210> 35
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 35

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 36
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 36

Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu

```
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 37
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 37

```
Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45
```

```
Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 38
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 38

```
Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80
```

```
Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 39
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 39

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110
```

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 40
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 40

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr

130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 41
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 41

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 42
<211> 166
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<213> Artificial

<220>
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<400> 42

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 43
<211> 166
<212> PRT

<213> Artificial

<220>
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<400> 43

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 44
<211> 166
<212> PRT
<213> Artificial

<220>
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<400> 44

```
Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 45
<211> 166
<212> PRT
<213> Artificial

<220>
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<400> 45

```
Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30
```

```
Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 46
<211> 166
<212> PRT
<213> Artificial

<220>
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<400> 46

```
Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60
```

```
Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 47
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 47

```
Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
```

85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 48
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 48

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

```
Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 49
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 49

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140
```

```
Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 50
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 50

```
Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 51
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 51

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 52
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 52

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 53
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 53

Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 54
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 54

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln

35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 55
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 55

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

```
Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 56
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 56

```
Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1               5                  10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95
```

```
His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 57
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 57

```
Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125
```

```
Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 58
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 58

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
            100                 105                 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
```

145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 59
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 59

Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 60
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 60

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 61
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 61

Met Ser Tyr Asn Gln Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 62
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 62

Met Ser Tyr Asn Leu Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

```
Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 63
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 63

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45
```

```
Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 64
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 64

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Lys Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80
```

```
Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
            100                 105                 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
        115                 120                 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 65
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 65

```
Met Ser Tyr Asn Gln Leu Gly Glu Leu Gln Arg Ser Ser Asn Phe Gln
1               5                   10                  15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
            20                  25                  30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
        35                  40                  45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
    50                  55                  60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65                  70                  75                  80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
                85                  90                  95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Asn Thr
```

100 105 110

Arg Gly Lys Glu Met Ser Ser Arg His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 66
<211> 166
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 66

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
1 5 10 15

Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
20 25 30

Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Ser Gln
35 40 45

Gln Ser Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Ser Glu Lys Glu Asp Ser Thr
100 105 110

Arg Gly Lys Ser Met Ser Ser Ser His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

```
Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
    130                 135                 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145                 150                 155                 160

Thr Gly Tyr Leu Arg Asn
                165
```

<210> 67
<211> 180
<212> PRT
<213> Homo sapiens

<400> 67

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175
```

Phe Arg Arg Lys
180

<210> 68
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 68

Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Arg Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Gln Pro Arg Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
35 40 45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Ala Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys

180

<210> 69
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 69

Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 70
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 70

Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Ala Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 71
<211> 180
<212> PRT

<213> Artificial

<220>
<223> synthetic

<400> 71

Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Gln Pro Arg Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 72
<211> 180
<212> PRT
<213> Artificial

<220>

<223> synthetic

<400> 72

```
Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Trp Gln
1               5                  10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Gln Pro Arg Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Ala Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 73
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 73

```
Leu Asp Cys Asn Leu Leu Asn Asn His Leu Arg Arg Val Thr Trp Gln
1               5                  10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Gln Pro Arg Glu Cys
            20                  25                  30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
        35                  40                  45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 74
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 74

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                  10                  15
```

```
Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
        35                  40                  45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 75
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 75

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
```

20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 76
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 76

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

```
Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 77
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 77

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45
```

```
Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Ala Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 78
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 78

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60
```

```
Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 79
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 79

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Arg Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
```

65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 80
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 80

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

```
Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 81
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 81

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
        35                  40                  45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95
```

```
Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Ala Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 82
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 82

```
Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
        35                  40                  45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110
```

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 83
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 83

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
35 40 45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro

115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 84
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 84

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
35 40 45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

```
Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Ala Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 85
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 85

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Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140
```

```
Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 86
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 86

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Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160
```

```
Ala Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
                165                 170                 175

Phe Arg Arg Lys
            180
```

<210> 87
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 87

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Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1               5                   10                  15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
            20                  25                  30

Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
        35                  40                  45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
    50                  55                  60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65                  70                  75                  80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
                85                  90                  95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
            100                 105                 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
        115                 120                 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
    130                 135                 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145                 150                 155                 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
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165 170 175

Phe Arg Arg Lys
180

<210> 88
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 88

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Gln
35 40 45

Thr Gln Pro Asn Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Thr Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 89
<211> 180
<212> PRT
<213> Artificial

<220>
<223> synthetic

<400> 89

Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln
1 5 10 15

Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Gln Pro Arg Glu Cys
20 25 30

Leu Arg Glu Asn Asn Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr
35 40 45

Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser
50 55 60

Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Ser Lys Ala Trp Lys
65 70 75 80

Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu
85 90 95

Asp Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met
100 105 110

Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro
115 120 125

Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn
130 135 140

Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg
145 150 155 160

Val Glu Ile Arg Arg Ala Leu Ser Tyr Phe Thr Lys Phe Thr Ala Leu
165 170 175

Phe Arg Arg Lys
180

<210> 90
<211> 152
<212> PRT
<213> Homo sapiens

<400> 90

Cys Tyr Leu Ser Arg Lys Leu Met Leu Asp Ala Arg Glu Asn Leu Lys
1 5 10 15

Leu Leu Asp Arg Met Asn Arg Leu Ser Pro His Ser Cys Leu Gln Asp
20 25 30

Arg Lys Asp Phe Gly Leu Pro Gln Glu Met Val Glu Gly Asp Gln Leu
35 40 45

Gln Lys Asp Gln Ala Phe Pro Val Leu Tyr Glu Met Leu Gln Gln Ser
50 55 60

Phe Asn Leu Phe Tyr Thr Glu His Ser Ser Ala Ala Trp Asp Thr Thr
65 70 75 80

Leu Leu Glu Gln Leu Cys Thr Gly Leu Gln Gln Gln Leu Asp His Leu
85 90 95

Asp Thr Cys Arg Gly Met Asp Pro Ile Val Thr Val Lys Lys Tyr Phe
100 105 110

Gln Gly Ile Tyr Asp Tyr Leu Gln Glu Lys Gly Tyr Ser Asp Cys Ala
115 120 125

Trp Glu Ile Val Arg Val Glu Met Met Arg Ala Leu Thr Val Ser Thr
130 135 140

Thr Leu Gln Lys Arg Leu Thr Lys
145 150